H0354-TMA/RECRA

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0051764

APR 1999

Data Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9903L440
SDG# : H0354
SAF# : B99-001

W.O. # : 10985-001-001-9999-00
Date Received: 03-13-99

AUG 1999 RECEIVED EDMC

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank for Chromium VI was within method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analysis for Chromium VI was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

Bat E. L

3-23-99

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

njp\i03-440

01

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod) __ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI Method: Sw 3060-7196A

02

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/18/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440
WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TVX5	% Solids	86.5	%	0.01	1.0
		Chromium VI	0.92 u	MG/KG	0.92	1.0
-002	B0TVX6	% Solids	93.0	%	0.01	1.0
		Chromium VI	0.86 u	MG/KG	0.86	1.0
-003	B0TVX7	% Solids	87.8	%	0.01	1.0
		Chromium VI	1.0	MG/KG	0.91	1.0
-004	B0TVX8	% Solids	92.4	%	0.01	1.0
		Chromium VI	0.87 u	MG/KG	0.87	1.0
-005	B0TVX9	% Solids	94.4	%	0.01	1.0
		Chromium VI	0.85 u	MG/KG	0.85	1.0
-006	B0TVY0	% Solids	91.7	%	0.01	1.0
		Chromium VI	1.6	MG/KG	0.87	1.0
-007	B0TVY1	% Solids	87.3	%	0.01	1.0
		Chromium VI	0.92 u	MG/KG	0.92	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/18/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI028-MB1	Chromium VI	0.80 u	MG/KG	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 03/18/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-006	B0TVY0	Soluble Chromium VI	43.8	1.6	43.6	96.9	1.0
		Insoluble Chromium VI	1230	1.6	1350	90.8	20.0
BLANK10	99LVI028-MB1	Soluble Chromium VI	39.5	0.80u	40.0	98.9	1.0
		Insoluble Chromium VI	1110	0.80u	1160	95.4	20.0

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INORGANICS PRECISION REPORT 03/18/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-006REP	B0TVY0	Chromium VI	1.6	1.5	7.4	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TVX5						
% SOLIDS	001	S	99L%S040	03/08/99	03/16/99	03/17/99
CHROMIUM VI	001	S	99LVI028	03/08/99	03/16/99	03/16/99
B0TVX6						
% SOLIDS	002	S	99L%S040	03/08/99	03/16/99	03/17/99
CHROMIUM VI	002	S	99LVI028	03/08/99	03/16/99	03/16/99
B0TVX7						
% SOLIDS	003	S	99L%S040	03/08/99	03/16/99	03/17/99
CHROMIUM VI	003	S	99LVI028	03/08/99	03/16/99	03/16/99
B0TVX8						
% SOLIDS	004	S	99L%S040	03/09/99	03/16/99	03/17/99
CHROMIUM VI	004	S	99LVI028	03/09/99	03/16/99	03/16/99
B0TVX9						
% SOLIDS	005	S	99L%S040	03/09/99	03/16/99	03/17/99
CHROMIUM VI	005	S	99LVI028	03/09/99	03/16/99	03/16/99
B0TVY0						
% SOLIDS	006	S	99L%S040	03/09/99	03/16/99	03/17/99
CHROMIUM VI	006	S	99LVI028	03/09/99	03/16/99	03/16/99
CHROMIUM VI	006 REP	S	99LVI028	03/09/99	03/16/99	03/16/99
CHROMIUM VI	006 MS	S	99LVI028	03/09/99	03/16/99	03/16/99
CHROMIUM VI	006 MSD	S	99LVI028	03/09/99	03/16/99	03/16/99
B0TVY1						
% SOLIDS	007	S	99L%S040	03/09/99	03/16/99	03/17/99
CHROMIUM VI	007	S	99LVI028	03/09/99	03/16/99	03/16/99

LAB QC:

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1	S	99LVI028	N/A	03/16/99	03/16/99
CHROMIUM VI	MB1 BS	S	99LVI028	N/A	03/16/99	03/16/99
CHROMIUM VI	MB1 BSD	S	99LVI028	N/A	03/16/99	03/16/99

RECRA LabNet Use Only

9903L440

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: ~~Bechtel Hanford~~ TNU-Hanford B99-001

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Sold TAT: 7day

Date Rec'd: 3-13-99 Date Due: 3-20-99

Account #:

Refrigerator #		1	3			3			1								
#/Type Container	Liquid																
	Solid	1AG	1AG			1AG			4oz Cr								
Volume	Liquid																
	Solid	60	60			60			4oz								
Preservatives		—	—			—											

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Cr 24H	Cr 5H			ICP 6				Met 1							
001	BOTVX5			S	3-8-99	1030	✓	✓			✓				✓							
002	6					1045	✓	✓			✓				✓							
003	7					1100	✓	✓			✓				✓							
004	8				3-09-99	0820	✓	✓			✓				✓							
005	9					0825	✓	✓			✓				✓							
006	BOTVY 0					0835	✓	✓			✓				✓							
BOT																						
SAF 3-13-99																						

Special Instructions:

SAF # = B99-001

Met 1 = ICP metals - Cr, Pb, Hg

DATE/REVISIONS:

1. Original COC not signed
2. ~~3-09-99~~ 3-13-99
3. Run Matrix QC
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped / Hand Delivered; Airbill # See Below; 2) Ambient or Chilled; 3) Received In Good Condition (Y) or N; 4) Labels Indicate Properly Preserved (Y) or N; 5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 5i °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 423579523324

Relinquished by	Received by	Date	Time
FedEx	[signature]	3/13/99	1000

Relinquished by	Received by	Date	Time

Bechtel Hanford Inc.	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	B99-001-100	Page 1 of 1

Collector Fahlberg/Kerkow	**Company Contact** R Coffman	**Telephone No.** 373-6425	**Project Coordinator** TRENT, SJ
Project Designation 100 BC Areas - Quick Turn	**Sampling Location** 100 B/C		**SAF No.** B99-001
Ice Chest No. EFC96-010	**Field Logbook No.** EL 1327-2		**Method of Shipment** Fed Ex
Shipped To ~~TMA~~/RECRA Rf 3.8.99	**Offsite Property No.** A990081		**Bill of Lading/Air Bill No.** 4235795233324
			COA R16B11260D

Price Code

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	See item (1)	Semi-VOA	VOA	See item (2)					
B0TVX5	Soil	3.8.99	1030		X	X	X					tie to B0TV17	
B0TVX6	Soil	3.8.99	1045		X	X	X					tie to B0TV18	
B0TVX7	Soil	3.8.99	1100		X	X	X					tie to B0TV19	
B0TVX8	Soil	3.8.99	0940		X	X	X					tie to B0TV16	

CHAIN OF POSSESSION	**Sign/Print Names**		
Relinquished By Fed Ex	Date/Time 3.13.99 1000	Received By [signature]	Date/Time 3.13.99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1 12

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-2		SAF No. B99-001	
Ice Chest No. ER-C96-010	Field Logbook No. EL 1327-2		Method of Shipment FedEx	
Shipped To ~~TMA~~/RECRA RE 3.9.99 51 lbs	Offsite Property No. A9900081		Bill of Lading/Air Bill No. 423579523324 COA	

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage											
	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s) / Volume	1 / 20mL	1 / 60mL	1 / 60mL	1 / 60mL	1 / 500mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.					
Sample No.	Matrix * / Sample Date / Sample Time										
B0TVX8	Soil / 3-9-99 / 0820		X	X	X					tie to	B9TV31
B0TVX9	Soil / 3-9-99 / 0825		X	X	X						B9TV32
B0TVY0	Soil / 3-9-99 / 0835		X	X	X						B9TV33

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	Ed Fahlberg	3.13.99 1000
Received By	[signature]	3.13.99 1000
Relinquished By		
Received By		
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Original

SDR # B99-025
Revision #: 0
Date Initiated: 3/16/99

SAMPLE DISPOSITION RECORD

SAF: B99-001
OU: 100-BC-1
Project ID: 100-BC-1 RM ACT
Task ID: 1
Sampling Event: 100-BC Areas – Quick Turn

Laboratory: TMA/RECRA

Task Manager: Corpuz, F.M.

Sampling Information:
Number of Samples: 3 3 3/30/99
ID Numbers: ~~B0VX9, B0VY1,~~ B0TVY0, B0TVX9, B0TVY1
Matrix: Soil
Collection Date: 03/09/99

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Chain of custody problem
Description: Chain of custody not signed

Disposition:

Description: Laboratory is to continue with analyses of listed samples. Data will be used as is.

Justification: These samples will not be used to verify closure of a waste site; the data are for waste disposal and contaminated soil removal purposes only.

Approval Signatures:

S.J. Trent — 3/22/99
Project Coordinator (Print/Sign Name) — Date

F.M. Corpuz — 3-24-99
Task Manager (Print/Sign Name) — Date

TO CHECK A BOX: Double click the box; select "Default Value – Checked"

BHI-EE-109 (02/99)

COPY : M STURG

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

APR 1999

Data

Recra LabNet Philadelphia
Analytical Report

Client : TNU HANFORD B99-001
RFW# : 9903L440
SDG/SAF# : H0354/B99-001

W.O.# : 10985-001-001-9999-00
Date Received: 03-13-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

3-22-95
Date

mld/m03-440

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L440

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	__6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	__6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	__6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	__7470A [3] ✓7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	__6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	__6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ Method:_____

03

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 03/22/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TVX5	Chromium, Total	8.0	MG/KG	0.46	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	6.5	MG/KG	3.6	1.0
-002	B0TVX6	Chromium, Total	7.7	MG/KG	0.39	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.1	MG/KG	3.0	1.0
-003	B0TVX7	Chromium, Total	7.8	MG/KG	0.38	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.8	MG/KG	2.9	1.0
-004	B0TVX8	Chromium, Total	11.6	MG/KG	0.34	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	11.0	MG/KG	2.7	1.0
-005	B0TVX9	Chromium, Total	5.4	MG/KG	0.37	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Lead, Total	2.9 u	MG/KG	2.9	1.0
-006	B0TVY0	Chromium, Total	4.6	MG/KG	0.32	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.5 u	MG/KG	2.5	1.0
-007	B0TVY1	Chromium, Total	8.8	MG/KG	0.40	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Lead, Total	3.2	MG/KG	3.1	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/22/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0172-MB1	Chromium, Total	0.42 u	MG/KG	0.42	1.0
		Lead, Total	3.3 u	MG/KG	3.3	1.0
BLANK1	99C0077-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 03/22/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0TVX5	Chromium, Total	27.8	8.0	20.6	96.1	1.0
		Mercury, Total	0.20	0.02u	0.19	101.0	1.0
		Lead, Total	55.0	6.5	51.6	94.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 03/22/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0TVX5	Chromium, Total	8.0	7.6	5.1	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	6.5	3.5 u	~~NC~~ 20C	1.0

Correction
ND 3/22/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/22/99

CLIENT: TNU-HANFORD B99-001 RECRA LOT #: 9903L440

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0172-LC1	Chromium, LCS	49.8	50.0	MG/KG	99.6
		Lead, LCS	240	250	MG/KG	96.1
LCS1	99C0077-LC1	Mercury, LCS	1.3	1.2	MG/KG	113.7

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TVX5						
CHROMIUM, TOTAL	001	S	99L0172	03/08/99	03/21/99	03/22/99
CHROMIUM, TOTAL	001 REP	S	99L0172	03/08/99	03/21/99	03/22/99
CHROMIUM, TOTAL	001 MS	S	99L0172	03/08/99	03/21/99	03/22/99
MERCURY, TOTAL	001	S	99C0077	03/08/99	03/17/99	03/18/99
MERCURY, TOTAL	001 REP	S	99C0077	03/08/99	03/17/99	03/18/99
MERCURY, TOTAL	001 MS	S	99C0077	03/08/99	03/17/99	03/18/99
LEAD, TOTAL	001	S	99L0172	03/08/99	03/21/99	03/22/99
LEAD, TOTAL	001 REP	S	99L0172	03/08/99	03/21/99	03/22/99
LEAD, TOTAL	001 MS	S	99L0172	03/08/99	03/21/99	03/22/99
B0TVX6						
CHROMIUM, TOTAL	002	S	99L0172	03/08/99	03/21/99	03/22/99
MERCURY, TOTAL	002	S	99C0077	03/08/99	03/17/99	03/18/99
LEAD, TOTAL	002	S	99L0172	03/08/99	03/21/99	03/22/99
B0TVX7						
CHROMIUM, TOTAL	003	S	99L0172	03/08/99	03/21/99	03/22/99
MERCURY, TOTAL	003	S	99C0077	03/08/99	03/17/99	03/18/99
LEAD, TOTAL	003	S	99L0172	03/08/99	03/21/99	03/22/99
B0TVX8						
CHROMIUM, TOTAL	004	S	99L0172	03/08/99	03/21/99	03/22/99
MERCURY, TOTAL	004	S	99C0077	03/08/99	03/17/99	03/18/99
LEAD, TOTAL	004	S	99L0172	03/08/99	03/21/99	03/22/99
B0TVX9						
CHROMIUM, TOTAL	005	S	99L0172	03/09/99	03/21/99	03/22/99
MERCURY, TOTAL	005	S	99C0077	03/09/99	03/17/99	03/18/99
LEAD, TOTAL	005	S	99L0172	03/09/99	03/21/99	03/22/99
B0TVY0						
CHROMIUM, TOTAL	006	S	99L0172	03/09/99	03/21/99	03/22/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0077	03/09/99	03/17/99	03/18/99
LEAD, TOTAL	006	S	99L0172	03/09/99	03/21/99	03/22/99
B0TVY1						
CHROMIUM, TOTAL	007	S	99L0172	03/09/99	03/21/99	03/22/99
MERCURY, TOTAL	007	S	99C0077	03/09/99	03/17/99	03/18/99
LEAD, TOTAL	007	S	99L0172	03/09/99	03/21/99	03/22/99

LAB QC:

CHROMIUM LABORATORY	LC1 BS	S	99L0172	N/A	03/21/99	03/22/99
CHROMIUM, TOTAL	MB1	S	99L0172	N/A	03/21/99	03/22/99
MERCURY LABORATORY	LC1 BS	S	99C0077	N/A	03/17/99	03/18/99
MERCURY, TOTAL	MB1	S	99C0077	N/A	03/17/99	03/18/99
LEAD LABORATORY	LC1 BS	S	99L0172	N/A	03/21/99	03/22/99
LEAD, TOTAL	MB1	S	99L0172	N/A	03/21/99	03/22/99

RECRA LabNet Use Only: 9903L440

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) ALL

Client ~~Bechtel Hanford~~ TNU-Hanford B99-001 (3/10/99)
Est. Final Proj. Sampling Date
Project # 10985-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager OJ
QC Spec Del Std TAT 7 day
Date Rec'd 3-13-99 Date Due 3-20-99
Account #

	VOA	BNA	Pest/PCB	Herb				Metal	CN
Refrigerator #	1	3			3				
#/Type Container – Liquid									
#/Type Container – Solid	1AG	1AG			1AG			w/ Cr+6	
Volume – Liquid									
Volume – Solid	40	60			40				
Preservatives	–	–			–				

ORGANIC / INORG — ANALYSES REQUESTED — RECRA LabNet Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	ICR6	Met ①
001	BOTVX5			S	3-8-99	1030	✓	✓	✓	✓
002	6					1045	✓	✓	✓	✓
003	7					1100	✓	✓	✓	✓
004	8				3-9-99	0820	✓	✓	✓	✓
005	9					0825	✓	✓	✓	✓
006	BOTVY0					0835	✓	✓	✓	✓
007	BOTVY1			S	3/9/99	0836	✓	✓	✓	✓

ASP 3-13-99

Special Instructions:
SAF # = B99-001
Met ① = ICP metals - Cr, Pb, Hg

DATE/REVISIONS:
1. Original CoC not signed
2.
3. Run Matrix QC (007 ... 3-13-99)
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	[signature]	3-13-99	1000				

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # See Below
2) Ambient or Chilled (circled)
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
423579523324

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-100	Page 1 of 1

Collector: Fahlberg/Kerkow	Company Contact: R Coffman — Telephone No.: 373-6425	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 7 Days
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C	SAF No.: B99-001	
Ice Chest No.: EFL96-010	Field Logbook No.: EL 1327-2	Method of Shipment: FedEx	
Shipped To: ~~TMA/RECRA~~ RR 3.8.99	Offsite Property No.: A990081	Bill of Lading/Air Bill No.: U235752333Y	
		COA: R16B112602	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s) / Volume	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions				
				None	P	1 / 20mL		Cool 4C	Cool 4C	Cool 4C	None				
					aG	1 / 60mL		aG	aG	aG	aG				
						1 / 60mL									
						1 / 500mL									
B0TVX5	Soil	3·8·99	1030					X	X	X				tie to B0TV17	
B0TVX6	Soil	3·8·99	1045					X	X	X				tie to B0TV18	
B0TVX7	Soil	3·8·99	1100					X	X	X				tie to B0TV19	
B0TVX8	Soil	3·8·99	0940					X	X	X				tie to B0TV16	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: FedEx	Date/Time: 3/3.99 1000	Received By: [signature]	Date/Time: 3/3/99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
SAMPLE DISPOSAL SECTION	Disposal Method	Disposed By	

3

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-2		SAF No. B99-001
Ice Chest No. ER C96-010	Field Logbook No. EL 1327-2		Method of Shipment FedEx
Shipped To ~~TMA~~/RECRA RS 3-9-99 51165	Offsite Property No. A990081		Bill of Lading/Air Bill No. 423579523324
			COA

Price Code

Data Turnaround

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions						

Sample No.	Matrix *	Sample Date	Sample Time										
B0TVX8	Soil	3-9-99	0820		X	X	X					tie to	B0TV31
B0TVX9	Soil	3-9-99	0825		X	X	X						B0TV32
B0TVY0	Soil	3-9-99	0835		X	X	X						B0TV33

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	3-13-99 1000	[signature]	3-13-99 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-001
RFW #: 9903L440
SDG/SAF #: H0354/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 03-13-99

SEMIVOLATILE

Seven (7) soil samples were collected on 03-08,09-99.

The samples and their associated QC samples were extracted on 03-16,17-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 03-19,22,23-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis were met.

3. Non-target compounds were detected in the samples.

4. All surrogate recoveries were within EPA QC limits.

5. All matrix spike recoveries were within EPA QC limits.

6. All blank spike recoveries were within EPA QC limits.

7. The method blank 99LE0322-MB1 contained the common laboratory contaminant Bis (2-ethylhexyl)phthalate at a level less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-26-99
Date

som\gorup\data\bna\tnu03440.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List — Report Date: 03/23/99 16:18

RFW Batch Number: **9903L440** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1a

	Cust ID:	B0TVX5	B0TVX5	B0TVX5	B0TVX6	B0TVX7	B0TVX8
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	74 %	67 %	71 %	83 %	62 %	70 %
	2-Fluorobiphenyl	82 %	73 %	70 %	85 %	68 %	73 %
	Terphenyl-d14	95 %	80 %	76 %	94 %	78 %	81 %
	Phenol-d5	76 %	66 %	73 %	82 %	58 %	63 %
	2-Fluorophenol	74 %	68 %	72 %	79 %	57 %	64 %
	2,4,6-Tribromophenol	79 %	69 %	73 %	75 %	50 %	56 %
Phenol		390 U	62 %	65 %	360 U	380 U	360 U
bis(2-Chloroethyl)ether		390 U	390 U	390 U	360 U	380 U	360 U
2-Chlorophenol		390 U	65 %	69 %	360 U	380 U	360 U
1,3-Dichlorobenzene		390 U	390 U	390 U	360 U	380 U	360 U
1,4-Dichlorobenzene		390 U	60 %	64 %	360 U	380 U	360 U
1,2-Dichlorobenzene		390 U	390 U	390 U	360 U	380 U	360 U
2-Methylphenol		390 U	390 U	390 U	360 U	380 U	360 U
2,2'-oxybis(1-Chloropropane)		390 U	390 U	390 U	360 U	380 U	360 U
4-Methylphenol		390 U	390 U	390 U	360 U	380 U	360 U
N-Nitroso-di-n-propylamine		390 U	71 %	82 %	360 U	380 U	360 U
Hexachloroethane		390 U	390 U	390 U	360 U	380 U	360 U
Nitrobenzene		390 U	390 U	390 U	360 U	380 U	360 U
Isophorone		390 U	390 U	390 U	360 U	380 U	360 U
2-Nitrophenol		390 U	390 U	390 U	360 U	380 U	360 U
2,4-Dimethylphenol		390 U	390 U	390 U	360 U	380 U	360 U
bis(2-Chloroethoxy)methane		390 U	390 U	390 U	360 U	380 U	360 U
2,4-Dichlorophenol		390 U	390 U	390 U	360 U	380 U	360 U
1,2,4-Trichlorobenzene		390 U	65 %	69 %	360 U	380 U	360 U
Naphthalene		390 U	390 U	390 U	360 U	380 U	360 U
4-Chloroaniline		390 U	390 U	390 U	360 U	380 U	360 U
Hexachlorobutadiene		390 U	390 U	390 U	360 U	380 U	360 U
4-Chloro-3-methylphenol		390 U	70 %	73 %	360 U	380 U	360 U
2-Methylnaphthalene		390 U	390 U	390 U	360 U	380 U	360 U
Hexachlorocyclopentadiene		390 U	390 U	390 U	360 U	380 U	360 U
2,4,6-Trichlorophenol		390 U	390 U	390 U	360 U	380 U	360 U
2,4,5-Trichlorophenol		960 U	960 U	960 U	900 U	950 U	900 U

*= Outside of EPA CLP QC limits.

Cust ID:	B0TVX5		B0TVX5		B0TVX5		B0TVX6		B0TVX7		B0TVX8	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	390	U	390	U	390	U	360	U	380	U	360	U
2-Nitroaniline	960	U	960	U	960	U	900	U	950	U	900	U
Dimethylphthalate	390	U	390	U	390	U	360	U	380	U	360	U
Acenaphthylene	390	U	390	U	390	U	360	U	380	U	360	U
2,6-Dinitrotoluene	390	U	390	U	390	U	360	U	380	U	360	U
3-Nitroaniline	960	U	960	U	960	U	900	U	950	U	900	U
Acenaphthene	390	U	72	%	70	%	360	U	380	U	360	U
2,4-Dinitrophenol	960	U	960	U	960	U	900	U	950	U	900	U
4-Nitrophenol	960	U	53	%	55	%	900	U	950	U	900	U
Dibenzofuran	390	U	390	U	390	U	360	U	380	U	360	U
2,4-Dinitrotoluene	390	U	64	%	72	%	360	U	380	U	360	U
Diethylphthalate	390	U	390	U	390	U	360	U	380	U	360	U
4-Chlorophenyl-phenylether	390	U	390	U	390	U	360	U	380	U	360	U
Fluorene	390	U	390	U	390	U	360	U	380	U	360	U
4-Nitroaniline	960	U	960	U	960	U	900	U	950	U	900	U
4,6-Dinitro-2-methylphenol	960	U	960	U	960	U	900	U	950	U	900	U
N-Nitrosodiphenylamine (1)	390	U	390	U	390	U	360	U	380	U	360	U
4-Bromophenyl-phenylether	390	U	390	U	390	U	360	U	380	U	360	U
Hexachlorobenzene	390	U	390	U	390	U	360	U	380	U	360	U
Pentachlorophenol	960	U	79	%	82	%	900	U	950	U	900	U
Phenanthrene	390	U	390	U	390	U	360	U	380	U	360	U
Anthracene	390	U	390	U	390	U	360	U	380	U	360	U
Carbazole	390	U	390	U	390	U	360	U	380	U	360	U
Di-n-butylphthalate	390	U	390	U	390	U	360	U	380	U	360	U
Fluoranthene	390	U	390	U	390	U	360	U	380	U	360	U
Pyrene	390	U	81	%	75	%	360	U	380	U	360	U
Butylbenzylphthalate	390	U	390	U	390	U	360	U	380	U	360	U
3,3'-Dichlorobenzidine	390	U	390	U	390	U	360	U	380	U	360	U
Benzo(a)anthracene	390	U	390	U	390	U	360	U	380	U	360	U
Chrysene	390	U	390	U	390	U	360	U	380	U	360	U
bis(2-Ethylhexyl)phthalate	32	JB	390	U	390	U	360	U	380	U	360	U
Di-n-octyl phthalate	390	U	390	U	390	U	360	U	380	U	360	U
Benzo(b)fluoranthene	390	U	390	U	390	U	360	U	380	U	360	U
Benzo(k)fluoranthene	390	U	390	U	390	U	360	U	380	U	360	U
Benzo(a)pyrene	390	U	390	U	390	U	360	U	380	U	360	U
Indeno(1,2,3-cd)pyrene	390	U	390	U	390	U	360	U	380	U	360	U
Dibenz(a,h)anthracene	390	U	390	U	390	U	360	U	380	U	360	U
Benzo(g,h,i)perylene	390	U	390	U	390	U	360	U	380	U	360	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

90

	Cust ID:	B0TVX9	B0TVY0	B0TVY1	SBLKSH	SBLKSH BS	SBLKSK
Sample Information	RFW#:	005	006	007	99LE0322-MB1	99LE0322-MB1	99LE0330-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	73 %	69 %	65 %	79 %	79 %	65 %
	2-Fluorobiphenyl	80 %	68 %	73 %	81 %	83 %	69 %
	Terphenyl-d14	90 %	81 %	78 %	85 %	86 %	78 %
	Phenol-d5	64 %	63 %	68 %	81 %	76 %	64 %
	2-Fluorophenol	63 %	69 %	70 %	75 %	76 %	66 %
	2,4,6-Tribromophenol	64 %	52 %	74 %	75 %	81 %	68 %
Phenol		350 U	360 U	380 U	330 U	68 %	330 U
bis(2-Chloroethyl)ether		350 U	360 U	380 U	330 U	330 U	330 U
2-Chlorophenol		350 U	360 U	380 U	330 U	75 %	330 U
1,3-Dichlorobenzene		350 U	360 U	380 U	330 U	330 U	330 U
1,4-Dichlorobenzene		350 U	360 U	380 U	330 U	71 %	330 U
1,2-Dichlorobenzene		350 U	360 U	380 U	330 U	330 U	330 U
2-Methylphenol		350 U	360 U	380 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	360 U	380 U	330 U	330 U	330 U
4-Methylphenol		350 U	360 U	380 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine		350 U	360 U	380 U	330 U	108 %	330 U
Hexachloroethane		350 U	360 U	380 U	330 U	330 U	330 U
Nitrobenzene		350 U	360 U	380 U	330 U	330 U	330 U
Isophorone		350 U	360 U	380 U	330 U	330 U	330 U
2-Nitrophenol		350 U	360 U	380 U	330 U	330 U	330 U
2,4-Dimethylphenol		350 U	360 U	380 U	330 U	330 U	330 U
bis(2-Chloroethoxy)methane		350 U	360 U	380 U	330 U	330 U	330 U
2,4-Dichlorophenol		350 U	360 U	380 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene		350 U	360 U	380 U	330 U	83 %	330 U
Naphthalene		350 U	360 U	380 U	330 U	330 U	330 U
4-Chloroaniline		350 U	360 U	380 U	330 U	330 U	330 U
Hexachlorobutadiene		350 U	360 U	380 U	330 U	330 U	330 U
4-Chloro-3-methylphenol		350 U	360 U	380 U	330 U	75 %	330 U
2-Methylnaphthalene		350 U	360 U	380 U	330 U	330 U	330 U
Hexachlorocyclopentadiene		350 U	360 U	380 U	330 U	330 U	330 U
2,4,6-Trichlorophenol		350 U	360 U	380 U	330 U	330 U	330 U
2,4,5-Trichlorophenol		880 U	910 U	960 U	840 U	840 U	840 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B0TVX9		B0TVY0		B0TVY1		SBLKSH		SBLKSH BS		SBLKSK	
	RFW#:	005		006		007		99LE0322-MB1		99LE0322-MB1		99LE0330-MB1	
2-Chloronaphthalene		350	U	360	U	380	U	330	U	330	U	330	U
2-Nitroaniline		880	U	910	U	960	U	840	U	840	U	840	U
Dimethylphthalate		350	U	360	U	380	U	330	U	330	U	330	U
Acenaphthylene		350	U	360	U	380	U	330	U	330	U	330	U
2,6-Dinitrotoluene		350	U	360	U	380	U	330	U	330	U	330	U
3-Nitroaniline		880	U	910	U	960	U	840	U	840	U	840	U
Acenaphthene		350	U	360	U	380	U	330	U	80	%	330	U
2,4-Dinitrophenol		880	U	910	U	960	U	840	U	840	U	840	U
4-Nitrophenol		880	U	910	U	960	U	840	U	86	%	840	U
Dibenzofuran		350	U	360	U	380	U	330	U	330	U	330	U
2,4-Dinitrotoluene		350	U	360	U	380	U	330	U	74	%	330	U
Diethylphthalate		350	U	360	U	380	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether		350	U	360	U	380	U	330	U	330	U	330	U
Fluorene		350	U	360	U	380	U	330	U	330	U	330	U
4-Nitroaniline		880	U	910	U	960	U	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol		880	U	910	U	960	U	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)		350	U	360	U	380	U	330	U	330	U	330	U
4-Bromophenyl-phenylether		350	U	360	U	380	U	330	U	330	U	330	U
Hexachlorobenzene		350	U	360	U	380	U	330	U	330	U	330	U
Pentachlorophenol		880	U	910	U	960	U	840	U	92	%	840	U
Phenanthrene		350	U	360	U	380	U	330	U	330	U	330	U
Anthracene		350	U	360	U	380	U	330	U	330	U	330	U
Carbazole		350	U	360	U	380	U	330	U	330	U	330	U
Di-n-butylphthalate		350	U	360	U	380	U	330	U	330	U	330	U
Fluoranthene		350	U	360	U	380	U	330	U	330	U	330	U
Pyrene		350	U	360	U	380	U	330	U	84	%	330	U
Butylbenzylphthalate		350	U	360	U	380	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine		350	U	360	U	380	U	330	U	330	U	330	U
Benzo(a)anthracene		350	U	360	U	380	U	330	U	330	U	330	U
Chrysene		350	U	360	U	380	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate		72	JB	360	U	380	U	22	J	330	U	330	U
Di-n-octyl phthalate		350	U	360	U	380	U	330	U	330	U	330	U
Benzo(b)fluoranthene		350	U	360	U	380	U	330	U	330	U	330	U
Benzo(k)fluoranthene		350	U	360	U	380	U	330	U	330	U	330	U
Benzo(a)pyrene		350	U	360	U	380	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene		350	U	360	U	380	U	330	U	330	U	330	U
Dibenz(a,h)anthracene		350	U	360	U	380	U	330	U	330	U	330	U
Benzo(g,h,i)perylene		350	U	360	U	380	U	330	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Cust ID: **SBLKSK BS**

Sample Information		
	RFW#:	**99LE0330-MB1**
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate Recovery	Nitrobenzene-d5	77	%
	2-Fluorobiphenyl	82	%
	Terphenyl-d14	90	%
	Phenol-d5	80	%
	2-Fluorophenol	82	%
	2,4,6-Tribromophenol	89	%

Phenol	71	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	78	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	74	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-di-n-propylamine	97	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	83	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	78	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	840	U

*= Outside of EPA CLP QC limits.

Cust ID: **SBLKSK BS**

RFW#: **99LE0330-MB1**

2-Chloronaphthalene	330	U
2-Nitroaniline	840	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	840	U
Acenaphthene	81	%
2,4-Dinitrophenol	840	U
4-Nitrophenol	78	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	77	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	840	U
4,6-Dinitro-2-methylphenol	840	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	94	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-butylphthalate	330	U
Fluoranthene	330	U
Pyrene	89	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	36	J
Di-n-octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenz(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B0TVX5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A031912

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 13 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/19/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDENSATE	7.28	100	JA
2.	314-40-9	BROMACIL	19.87	80	JN
3.		UNKNOWN	22.06	500	J
4.		UNKNOWN	22.57	200	JB
5.		UNKNOWN	24.34	300	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVX6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A031913

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 7 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/19/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDENSATE	6.48	200	JA
2.		UNKNOWN	22.57	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVX7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A032214

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 12 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVX8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A032215

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	22.07	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVX9

Lab Name: Recra.LabNet Work Order: 10985C01001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A032216

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALDOL CONDENSATE	5.18	1000	JA
2.		UNKNOWN	5.88	1000	J
3.		ALDOL CONDENSATE	6.69	200	JA
4.		UNKNOWN	7.64	500	J
5.		UNKNOWN	7.96	700	J
6.		UNKNOWN	9.28	900	J
7.		UNKNOWN	9.36	600	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVY0

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A032304

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 03/16/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/23/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TVY1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A031905

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: 13 decanted: (Y/N) Date Extracted: 03/17/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/19/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	22.01	80	J
2.		UNKNOWN	22.57	100	JB

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TVX5	001	S	99LE0322	03/08/99	03/16/99	03/19/99
B0TVX5	001 MS	S	99LE0322	03/08/99	03/16/99	03/22/99
B0TVX5	001 MSD	S	99LE0322	03/08/99	03/16/99	03/22/99
B0TVX6	002	S	99LE0322	03/08/99	03/16/99	03/19/99
B0TVX7	003	S	99LE0322	03/08/99	03/16/99	03/22/99
B0TVX8	004	S	99LE0322	03/08/99	03/16/99	03/22/99
B0TVX9	005	S	99LE0322	03/09/99	03/16/99	03/22/99
B0TVY0	006	S	99LE0322	03/09/99	03/16/99	03/23/99
B0TVY1	007	S	99LE0330	03/09/99	03/17/99	03/19/99
LAB QC:						
SBLKSH	MB1	S	99LE0322	N/A	03/16/99	03/19/99
SBLKSH	MB1 BS	S	99LE0322	N/A	03/16/99	03/19/99
SBLKSK	MB1	S	99LE0330	N/A	03/17/99	03/19/99
SBLKSK	MB1 BS	S	99LE0330	N/A	03/17/99	03/19/99

RECRA LabNet Use Only

99036 440

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8)

Client ~~Bechtel Hanford~~ TNU-Hanford B99-001

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 7 day

Date Rec'd 3-13-99 Date Due 3-20-99

Account #

	VOA	BNA	Pest/PCB	Herb					Metal	CN							
Refrigerator #	1	3			3												
#/Type Container Liquid																	
#/Type Container Solid	1AG	1AG			1AG												
Volume Liquid																	
Volume Solid	60	60			60				w/Cr6+								
Preservatives	–	–			–												
RECRA LabNet Use Only	0624H	0625H			ICR6				Met ①								

ANALYSES REQUESTED: ORGANIC (VOA, BNA, Pest/PCB, Herb); INORG (Metal, CN)

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	ICR6	Met ①
001	BOTVX5			S	3-8-99	1030	✓	✓	✓	✓
002	6					1045	✓	✓	✓	✓
003	7					1100	✓	✓	✓	✓
004	8				~~3~~-9-99	0820	✓	✓	✓	✓
005	9					0825	✓	✓	✓	✓
006	BOTVY0					0835	✓	✓	✓	✓
~~007~~	BOTVY1			S	3/9/99	0836	✓	✓	✓	✓
MP 3-13-99										

Special Instructions:

SAF # = B99-001

Met ① = ICP metals - Cr, Pb, Hg

DATE/REVISIONS:
1. Original CoC not Signed
2. ~~007~~ 3-13-99
3. Run Matrix QC
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # Sub Bchr
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 5.1 °C

Discrepancies Between Samples Labels and COC Record? (Y) or N
NOTES:
423579523324

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	3-13-99	1000

Relinquished by	Received by	Date	Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-100	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C		SAF No. B99-001
Ice Chest No. EFC96-010	Field Logbook No. EL 1327-2		Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA RF 3-8-99	Offsite Property No. A990081		Bill of Lading/Air Bill No. U23579523324
			COA R16B11260

Price Code

Data Turnaround: 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time											
B0TVX5	Soil	3-8-99	1030		X	X	X					tie to B0TV17		
B0TVX6	Soil	3-8-99	1045		X	X	X					tie to B0TV18		
B0TVX7	Soil	3-8-99	1100		X	X	X					tie to B0TV19		
B0TVX8	Soil	3-8-99	0940		X	X	X					tie to B0TV16		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Fed Ex	Date/Time: 3/13/99 1000	Received By: [signature]	Date/Time: 3/13/99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1

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Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-2		SAF No. B99-001	
Ice Chest No. ER C 96-010	Field Logbook No. EL 1327-2		Method of Shipment FedEx	
Shipped To ~~TMA~~/RECRA RS 3-9-99	Offsite Property No. A990081		Bill of Lading/Air Bill No. 4235795233324	
51165			COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

			Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
			Type of Container	P	aG	aG	aG	aG					
			No. of Container(s)	1	1	1	1	1					
			Volume	20mL	60mL	60mL	60mL	500mL					
SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions					
Sample No.	Matrix *	Sample Date	Sample Time										
B0TVX8	Soil	3-9-99	0820		X	X	X					Tie to	B0TV31
B0TVX9	Soil	3-9-99	0825		X	X	X						B0TV32
B0TVY0	Soil	3-9-99	0835		X	X	X						B0TV33

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By [signature]	Date/Time 3-13-99 1000	Received By [signature]	Date/Time 3-13-99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-001
RFW# : 9903L440
SDG/SAF #: H0354/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 03-13-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 03-08,09-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 03-17-99.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in these samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.

for S. Owen
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

03-26-99
Date

som\group\data\ voa\tnu03440.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List Report Date: 03/19/99 13:09

RFW Batch Number: **9903L440** Client: **TNU-HANFORD B99-001** Work Order: 10985001001 Page: 1a

	Cust ID:	B0TVX5	B0TVX5	B0TVX5	B0TVX6	B0TVX7	B0TVX8
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.02	1.02	0.980	0.980	1.02
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	104 %	110 %	96 %	100 %	106 %	95 %
	Bromofluorobenzene	95 %	101 %	89 %	89 %	99 %	90 %
	1,2-Dichloroethane-d4	90 %	106 %	98 %	88 %	93 %	80 %
		fl	fl	fl	fl	fl	fl
Chloromethane		12 U	12 U	12 U	11 U	11 U	11 U
Bromomethane		12 U	12 U	12 U	11 U	11 U	11 U
Vinyl Chloride		12 U	12 U	12 U	11 U	11 U	11 U
Chloroethane		12 U	12 U	12 U	11 U	11 U	11 U
Methylene Chloride		6 B	6 B	4 JB	4 JB	5 JB	4 JB
Acetone		30 B	12 U	12 U	16 B	11 U	13 B
Carbon Disulfide		6 U	6 U	6 U	6 U	6 U	6 U
1,1-Dichloroethene		6 U	88 %	79 %	6 U	6 U	6 U
1,1-Dichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	6 U	6 U	6 U
Chloroform		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
2-Butanone		12 U	12 U	12 U	11 U	11 U	11 U
1,1,1-Trichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Carbon Tetrachloride		6 U	6 U	6 U	6 U	6 U	6 U
Bromodichloromethane		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloropropane		6 U	6 U	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene		6 U	95 %	85 %	6 U	6 U	6 U
Dibromochloromethane		6 U	6 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Benzene		6 U	97 %	89 %	6 U	6 U	6 U
Trans-1,3 Dichloropropene		6 U	6 U	6 U	6 U	6 U	6 U
Bromoform		6 U	6 U	6 U	6 U	6 U	6 U
4-Methyl-2 pentanone		12 U	12 U	12 U	11 U	11 U	11 U
2-Hexanone		12 U	12 U	12 U	11 U	11 U	11 U
Tetrachloroethene		6 U	6 U	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Toluene		6 U	99 %	87 %	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B0TVX5	B0TVX5	B0TVX5	B0TVX6	B0TVX7	B0TVX8
	RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene		6 U	96 %	87 %	6 U	6 U	6 U
Ethylbenzene		6 U	6 U	6 U	6 U	6 U	6 U
Styrene		6 U	6 U	6 U	6 U	6 U	6 U
Xylene (total)		6 U	6 U	6 U	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B0TVX9	B0TVY0	B0TVY1	VBLKWW	VBLKWW BS
Sample Information	RFW#:	005	006	007	99LVH029-MB1	99LVH029-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.962	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	95 %	95 %	97 %	96 %	95 %
	Bromofluorobenzene	88 %	89 %	92 %	89 %	91 %
	1,2-Dichloroethane-d4	88 %	83 %	88 %	85 %	95 %
Chloromethane		10 U	11 U	11 U	10 U	10 U
Bromomethane		10 U	11 U	11 U	10 U	10 U
Vinyl Chloride		10 U	11 U	11 U	10 U	10 U
Chloroethane		10 U	11 U	11 U	10 U	10 U
Methylene Chloride		3 JB	5 JB	6 JB	4 J	3 JB
Acetone		10 U	11 U	11 U	7 J	10 U
Carbon Disulfide		5 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		5 U	6 U	6 U	5 U	81 %
1,1-Dichloroethane		5 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	6 U	6 U	5 U	5 U
Chloroform		5 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane		5 U	6 U	6 U	5 U	5 U
2-Butanone		10 U	11 U	11 U	10 U	10 U
1,1,1-Trichloroethane		5 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		1 J	6 U	6 U	5 U	5 U
Bromodichloromethane		5 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		5 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	6 U	6 U	5 U	5 U
Trichloroethene		5 U	6 U	6 U	5 U	90 %
Dibromochloromethane		5 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		5 U	6 U	6 U	5 U	5 U
Benzene		5 U	6 U	6 U	5 U	92 %
Trans-1,3-Dichloropropene		5 U	6 U	6 U	5 U	5 U
Bromoform		5 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone		10 U	11 U	11 U	10 U	10 U
2-Hexanone		10 U	11 U	11 U	10 U	10 U
Tetrachloroethene		5 U	6 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	6 U	6 U	5 U	5 U
Toluene		5 U	6 U	6 U	5 U	90 %

*= Outside of EPA CLP QC limits.

Cust ID:	B0TVX9	B0TVY0	B0TVY1	VBLKWW	VBLKWW BS
RFW#:	005	006	007	99LVH029-MB1	99LVH029-MB1
Chlorobenzene	5 U	6 U	6 U	5 U	90 %
Ethylbenzene	5 U	6 U	6 U	5 U	5 U
Styrene	5 U	6 U	6 U	5 U	5 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVX5

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-001

Sample wt/vol: 4.80 (g/mL) G Lab File ID: h031706

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 13 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 1.04

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVX6

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-002

Sample wt/vol: 5.10 (g/mL) G Lab File ID: h031707

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 7 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVX7

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-003

Sample wt/vol: 5.10 (g/mL) G Lab File ID: h031708

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 12 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	12.423	10	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVX8

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-004

Sample wt/vol: 4.90 (g/mL) G Lab File ID: h031709

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 8 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 1.02

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVX9

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-005

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h031718

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 6 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 0.962

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVY0

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-006

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h031711

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 8 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TVY1

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9903L440-007

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h031712

Level: (low/med) LOW Date Received: 03/13/99

% Moisture: not dec. 13 Date Analyzed: 03/17/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		SILOXANE	22.253	6	JB

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-001

DATE RECEIVED: 03/13/99 RFW LOT # :9903L440

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TVX5	001	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX5	001 MS	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX5	001 MSD	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX6	002	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX7	003	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX8	004	S	99LVH029	03/08/99	N/A	03/17/99
B0TVX9	005	S	99LVH029	03/09/99	N/A	03/17/99
B0TVY0	006	S	99LVH029	03/09/99	N/A	03/17/99
B0TVY1	007	S	99LVH029	03/09/99	N/A	03/17/99
LAB QC:						
VBLKWW	MB1	S	99LVH029	N/A	N/A	03/17/99
VBLKWW	MB1 BS	S	99LVH029	N/A	N/A	03/17/99

RECRA LabNet Use Only

99036440

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8)

Client: ~~Bechtel Hanford~~ TNU-Hanford B99-001 (3/10/99)

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 7 day

Date Rec'd: 3-13-99 Date Due: 3-20-99

Account #:

Refrigerator #		1	3			3		W/Cr-1
#/Type Container	Liquid							
	Solid	1AG	1AG			1AG		
Volume	Liquid							
	Solid	60	60			60		
Preservatives		–	–			–		
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb		INORG: Metal	CN

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA (0627H)	BNA (0625H)	Pest/PCB	Herb	ICR6	Metal (Met①)
001	BOTVX5			S	3-8-99	1030	✓	✓			✓	✓
002	6					1045	✓	✓			✓	✓
003	7					1100	✓	✓			✓	✓
004	8				3-9-99	0820	✓	✓			✓	✓
005	9					0825	✓	✓			✓	✓
006	BOTVY0					0835	✓	✓			✓	✓
~~007~~	BOTVY1			S	3/9/99	0836	✓	✓			✓	✓

(3-13-99)

Special Instructions:

SAF # = B99-001

Met① = ICP metals - Cr, Pb, Hg

DATE/REVISIONS:
1. Original CoC not signed
2. 007 (3-13-99)
3. Run Matrix QC
4.
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	3-13-99	1000

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? (Y) or N
NOTES: 4235795 23324

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # [signature]
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5.1 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-100	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C		SAF No. B99-001
Ice Chest No. EFL96-010	Field Logbook No. EL 1327-2		Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA RF 3.8.99	Offsite Property No. A990081		Bill of Lading/Air Bill No. 42357523324
			COA R16B112600

Price Code

Data Turnaround 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None						
	Type of Container	P	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1	1						
Special Handling and/or Storage	Volume	20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time											
B0TVX5	Soil	3.8.99	1030		X	X	X				tie to B0TV17			
B0TVX6	Soil	3.8.99	1045		X	X	X				tie to B0TV18			
B0TVX7	Soil	3.8.99	1100		X	X	X				tie to B0TV19			
B0TVX8	soil	3.8.99	0940		X	X	X				tie to B0TV16			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Fed Ex	Date/Time 3/3/99 1000	Received By [illegible signature]	Date/Time 3/3/99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-2		SAF No. B99-001	
Ice Chest No. ER C96-010	Field Logbook No. EL 1327-2		Method of Shipment Fed Ex	
Shipped To ~~TMA~~/RECRA BF 3.9.99 51 lbs	Offsite Property No. AC96081		Bill of Lading/Air Bill No. 4235 1951 2333 4 COA	

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage											
	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
	Volume	20mL	60mL	60mL	60mL	500mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions					
Sample No.	Matrix *	Sample Date	Sample Time								
B0TVX8	Soil	3.9.99	0820		X	X	X				tie to B0TV31
B0TVX9	Soil	3.9.99	0825		X	X	X				B0TV32
B0TVY0	Soil	3.9.99	0835		X	X	X				B0TV33

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Ed Ex	3.13.99 1000		3.13.99 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241, Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0354 is comprised of three solid (soil) samples designated under SAF No. B99-001 with a Project Designation of: 100 BC Areas - Quick Turn.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. There was a quich turn-around time requiement for gamma spec, isotopic plutonium, and total strontium. Isotopic uranium, isotopic plutonium, total strontium, and gamma spectroscpy data was sent by facsimile on March 22. A complete set of data was sent by facsimile on March 30, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.3 Isotopic Uranium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.4 Isotopic Plutonium Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.5 Americium-241 Analyses

The aliquot for the analysis was reduced for expeditious sample preparation. The resultant increased MDA's reflect the decreased aliquot.

2.6 Gamma Scan Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

SAMPLE SUMMARY

SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0TVX5	100 B/C	SOLID		N903058-01	B99-001	B99-001-100	03/08/99 10:30
B0TVX6	100 B/C	SOLID		N903058-02	B99-001	B99-001-100	03/08/99 10:45
B0TVX8	100 B/C	SOLID		N903058-03	B99-001	B99-001-100	03/08/99 09:40
B0TVX9	100 B/C	SOLID		N903058-04	B99-001	B99-001-101	03/08/99
B0TVY0	100 B/C	SOLID		N903058-05	B99-001	B99-001-101	03/09/99 08:20
B0TVY1	100 B/C	SOLID		N903058-06	B99-001	B99-001-101	03/09/99 08:35
Method Blank		SOLID		N903058-08	B99-001		
Lab Control Sample		SOLID		N903058-07	B99-001		
Duplicate (N903058-01)	100 B/C	SOLID		N903058-09	B99-001		03/08/99 10:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

QC SUMMARY

SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7705	B99-001-100	B0TVX5	SOLID	88.9			03/13/99	5	N903058-01	7705-001
		B0TVX6	SOLID	91.4			03/13/99	5	N903058-02	7705-002
		B0TVX8	SOLID	87.1			03/13/99	5	N903058-03	7705-003
	B99-001-101	B0TVX9	SOLID	92.8			03/13/99	5	N903058-04	7705-004
		B0TVY0	SOLID	92.5			03/13/99	4	N903058-05	7705-005
		B0TVY1	SOLID	87.9			03/13/99	4	N903058-06	7705-006
		Method Blank	SOLID						N903058-08	7705-008
		Lab Control Sample	SOLID						N903058-07	7705-007
		Duplicate (N903058-01)	SOLID	88.9			03/13/99	5	N903058-09	7705-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

PREP BATCH SUMMARY

SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	2851-024	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	2851-024	5.0	6			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	2851-024	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	2851-024	10.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	2851-024	15.0	6			1	1	1/1		
Liquid Scintillation Counting												
NI_L	SOLID	Nickel 63 in Soil	2851-024	10.0	6			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

WORK SUMMARY

SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0TVX5			N903058-01	7705-001	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/08/99	7705-001	GAM		03/18/99	03/22/99	NJV	Gamma Scan
B99-001-100	B99-001		03/13/99	7705-001	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-001	PU		03/19/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-001	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-001	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
B0TVX6			N903058-02	7705-002	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/08/99	7705-002	GAM		03/18/99	03/22/99	NJV	Gamma Scan
B99-001-100	B99-001		03/13/99	7705-002	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-002	PU		03/19/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-002	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-002	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
B0TVX8			N903058-03	7705-003	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/08/99	7705-003	GAM		03/18/99	03/22/99	NJV	Gamma Scan
B99-001-100	B99-001		03/13/99	7705-003	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-003	PU		03/21/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-003	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-003	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
B0TVX9			N903058-04	7705-004	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/08/99	7705-004	GAM		03/18/99	03/22/99	NJV	Gamma Scan
B99-001-101	B99-001		03/13/99	7705-004	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-004	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-004	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-004	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
B0TVY0			N903058-05	7705-005	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/09/99	7705-005	GAM		03/18/99	03/22/99	NJV	Gamma Scan
B99-001-101	B99-001		03/13/99	7705-005	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-005	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-005	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-005	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUFFIX	ANALYZED	REVIEWED	BY	METHOD
B0TVY1			N903058-06	7705-006	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/09/99	7705-006	GAM		03/19/99	03/22/99	NJV	Gamma Scan
B99-001-101	B99-001		03/13/99	7705-006	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-006	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-006	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-006	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
Method Blank			N903058-08	7705-008	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
		SOLID		7705-008	GAM		03/19/99	03/22/99	NJV	Gamma Scan
	B99-001			7705-008	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-008	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-008	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-008	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
Lab Control Sample			N903058-07	7705-007	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
		SOLID		7705-007	GAM		03/19/99	03/22/99	NJV	Gamma Scan
	B99-001			7705-007	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-007	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-007	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-007	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil
Duplicate (N903058-01)			N903058-09	7705-009	AM		03/23/99	03/30/99	NJV	Americium 241 in Soil
100 B/C		SOLID	03/08/99	7705-009	GAM		03/19/99	03/22/99	NJV	Gamma Scan
	B99-001		03/13/99	7705-009	NI_L		03/25/99	03/30/99	NJV	Nickel 63 in Soil
				7705-009	PU		03/20/99	03/22/99	NJV	Plutonium, Isotopic in Solids
				7705-009	SR		03/19/99	03/22/99	NJV	Total Strontium in Soil
				7705-009	U		03/20/99	03/22/99	NJV	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-001	Americium 241 in Soil	AM/CMPLATE	6			1	1	1	9
GAM	B99-001	Gamma Scan	GAMMAHI	6			1	1	1	9
NI_L	B99-001	Nickel 63 in Soil	NI63LSC	6			1	1	1	9
PU	B99-001	Plutonium, Isotopic in Solids	PUPLATE	6			1	1	1	9
SR	B99-001	Total Strontium in Soil		6			1	1	1	9
U	B99-001	Uranium, Isotopic in Soil	UPLATE	6			1	1	1	9
TOTALS				36			6	6	6	54

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/30/99

N903058-08

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0354

METHOD BLANK

Method Blank

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-08 Client sample id Method Blank
Dept sample id 7705-008 Material/Matrix SOLID
SAF No B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.053	0.071	0.14	0.30	U	U
Uranium 235	15117-96-1	0	0.043	0.16	0.30	U	U
Uranium 238	U-238	0.035	0.036	0.14	0.30	U	U
Plutonium 238	13981-16-3	0.732	0.10	0.024	0.050		PU
Plutonium 239/240	PU-239/240	0.765	0.11	0.028	0.050		PU
Nickel 63	13981-37-8	-0.305	1.2	2.0	20	U	NI_L
Americium 241	14596-10-2	0.002	0.012	0.019	0.050	U	AM
Total Strontium	SR-RAD	-0.068	0.32	0.60	1.0	U	SR
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 134	13967-70-9	U		0.020		U	GAM
Cesium 137	10045-97-3	U		0.018	0.050	U	GAM
Europium 152	14683-23-9	U		0.046	0.10	U	GAM
Europium 154	15585-10-1	U		0.050	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM
Uranium 238	U-238	U		1.9		U	GAM
Uranium 235	15117-96-1	U		0.060		U	GAM

100 BC Areas-Quick Turn

QC-BLANK 30327

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-07

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

LAB CONTROL SAMPLE

Lab Control Sample

SDG 7705
Contact L.A. Johnson

Client/Case no Hanford SDG-H0354
Case no TRB-SBB-207925

Lab sample id N903058-07
Dept sample id 7705-007

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-001

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	4.57	0.70	0.35	0.30		U	4.75	0.19	96	76-124	80-120
Uranium 235	3.88	0.64	0.12	0.30		U	3.89	0.16	100	73-127	80-120
Uranium 238	5.27	0.76	0.34	0.30		U	4.90	0.20	108	75-125	80-120
Plutonium 238	5.14	0.51	0.052	0.050	B	PU	5.04	0.20	102	82-118	80-120
Plutonium 239/240	5.26	0.52	0.038	0.050	B	PU	5.29	0.21	99	82-118	80-120
Nickel 63	134	3.6	2.0	20		NI_L	134	5.4	100	83-117	
Americium 241	4.47	0.31	0.019	0.050		AM	4.80	0.19	93	87-113	80-120
Total Strontium	11.6	0.63	0.26	1.0		SR	11.5	0.46	101	82-118	
Cobalt 60	0.252	0.034	0.022	0.050		GAM	0.308	0.012	82	75-125	80-120
Cesium 137	0.342	0.031	0.022	0.050		GAM	0.348	0.014	98	73-127	80-120

100 BC Areas-Quick Turn

QC-LCS 30326

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

DUPLICATE

N903058-09

B0TVX5

SDG 7705 | Client/Case no Hanford | SDG-H0354

Contact L.A. Johnson | Case no TRB-SBB-207925

DUPLICATE	ORIGINAL	
Lab sample id N903058-09	Lab sample id N903058-01	Client sample id B0TVX5
Dept sample id 7705-009	Dept sample id 7705-001	Location/Matrix 100 B/C SOLID
	Received 03/13/99	Collected 03/08/99 10:30
% solids 88.9	% solids 88.9	Custody/SAF No B99-001-100 B99-001

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALIFIERS	RPD %	3σ PROT TOT LIMIT
Uranium 233/234	0.681	0.30	0.27	0.30		U	0.629	0.26	0.24		8	92
Uranium 235	0.087	0.087	0.33	0.30	U	U	0.114	0.15	0.29	U	-	
Uranium 238	0.824	0.37	0.27	0.30		U	0.597	0.26	0.24		32	96
Plutonium 238	0	0.13	0.31	0.050	U	PU	0	0.20	0.44	U	-	
Plutonium 239/240	1.85	0.53	0.31	0.050	B	PU	2.18	0.62	0.44	B	16	62
Nickel 63	-0.704	1.4	2.4	20	U	NI_L	-0.467	1.4	2.4	U	-	
Americium 241	0.352	0.080	0.033	0.050		AM	0.417	0.087	0.032		17	47
Total Strontium	33.4	2.9	2.0	1.0		SR	39.3	2.6	1.9		16	27
Potassium 40	13.5	1.0	0.50			GAM	8.24	1.6	1.0		48	42
Cobalt 60	0.071	0.049	0.056	0.050		GAM	U		0.16	U	77	220
Cesium 134	U		0.084		U	GAM	U		0.19	U	-	
Cesium 137	252	1.0	0.25	0.050		GAM	248	1.6	0.53		2	32
Europium 152	1.90	0.64	0.93	0.10		GAM	U		2.0	U	5	165
Europium 154	U		0.22	0.10	U	GAM	U		0.47	U	-	
Europium 155	U		0.64	0.10	U	GAM	U		1.2	U	-	
Radium 226	0.376	0.28	0.38	0.10	U	GAM	U			J	1	190
Radium 228	0.816	0.27	0.29	0.20		GAM	U			J	95	113
Thorium 228	0.538	0.30	0.44			GAM	U				20	166
Thorium 232	0.816	0.27	0.29			GAM	U				95	113
Americium 241	U		0.58		U	GAM	U		0.56	U	-	
Uranium 238	U		7.7		U	GAM	U		17	U	-	
Uranium 235	U		0.99		U	GAM	U		2.1	U	-	

100 BC Areas-Quick Turn

QC-DUP#1 30328

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 03/30/99

N903058-01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVX5

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-01 Client sample id B0TVX5
Dept sample id 7705-001 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/08/99 10:30
% solids 88.9 Custody/SAF No B99-001-100 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.629	0.26	0.24	0.30		U
Uranium 235	15117-96-1	0.114	0.15	0.29	0.30	U	U
Uranium 238	U-238	0.597	0.26	0.24	0.30		U
Plutonium 238	13981-16-3	0	0.20	0.44	0.050	U	PU
Plutonium 239/240	PU-239/240	2.18	0.62	0.44	0.050	B	PU
Nickel 63	13981-37-8	-0.467	1.4	2.4	20	U	NI_L
Americium 241	14596-10-2	0.417	0.087	0.032	0.050		AM
Total Strontium	SR-RAD	39.3	2.6	1.9	1.0		SR
Potassium 40	13966-00-2	8.24	1.6	1.0			GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Cesium 134	13967-70-9	U		0.19		U	GAM
Cesium 137	10045-97-3	248	1.6	0.53	0.050		GAM
Europium 152	14683-23-9	U		2.0	0.10	U	GAM
Europium 154	15585-10-1	U		0.47	0.10	U	GAM
Europium 155	14391-16-3	U		1.2	0.10	U	GAM
Americium 241	14596-10-2	U		0.56		U	GAM
Uranium 238	U-238	U		17		U	GAM
Uranium 235	15117-96-1	U		2.1		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-02

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVX6

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-02 Client sample id B0TVX6
Dept sample id 7705-002 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/08/99 10:45
% solids 91.4 Custody/SAF No B99-001-100 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.564	0.27	0.25	0.30		U
Uranium 235	15117-96-1	0.040	0.080	0.31	0.30	U	U
Uranium 238	U-238	0.597	0.27	0.25	0.30		U
Plutonium 238	13981-16-3	-0.079	0.11	0.29	0.050	U	PU
Plutonium 239/240	PU-239/240	0.477	0.22	0.20	0.050	B	PU
Nickel 63	13981-37-8	-0.503	1.4	2.4	20	U	NI_L
Americium 241	14596-10-2	0.075	0.050	0.055	0.050		AM
Total Strontium	SR-RAD	5.35	1.8	2.2	1.0		SR
Potassium 40	13966-00-2	9.33	0.60	0.29			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 134	13967-70-9	U		0.041		U	GAM
Cesium 137	10045-97-3	11.9	0.15	0.053	0.050		GAM
Europium 152	14683-23-9	0.453	0.094	0.14	0.10		GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	0.287	0.082	0.092	0.10		GAM
Radium 228	15262-20-1	0.517	0.13	0.13	0.20		GAM
Thorium 228	14274-82-9	0.499	0.050	0.064			GAM
Thorium 232	TH-232	0.517	0.13	0.13			GAM
Americium 241	14596-10-2	U		0.11		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-03

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVX8

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-03 Client sample id B0TVX8
Dept sample id 7705-003 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/08/99 09:40
% solids 87.1 Custody/SAF No B99-001-100 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Uranium 233/234	U-233/234	0.874	0.37	0.27	0.30		U
Uranium 235	15117-96-1	0	0.085	0.32	0.30	U	U
Uranium 238	U-238	0.804	0.36	0.27	0.30		U
Plutonium 238	13981-16-3	0.046	0.093	0.15	0.050	U	PU
Plutonium 239/240	PU-239/240	4.78	0.62	0.15	0.050	B	PU
Nickel 63	13981-37-8	-0.591	1.5	2.5	20	U	NI_L
Americium 241	14596-10-2	0.879	0.13	0.049	0.050		AM
Total Strontium	SR-RAD	79.3	4.8	3.3	1.0		SR
Potassium 40	13966-00-2	13.4	2.7	3.7			GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Cesium 134	13967-70-9	U		0.21		U	GAM
Cesium 137	10045-97-3	182	1.4	0.49	0.050		GAM
Europium 152	14683-23-9	2.44	1.4	1.6	0.10		GAM
Europium 154	15585-10-1	U		0.52	0.10	U	GAM
Europium 155	14391-16-3	U		1.1	0.10	U	GAM
Radium 228	15262-20-1	1.07	0.60	0.66	0.20		GAM
Thorium 232	TH-232	1.07	0.60	0.66			GAM
Americium 241	14596-10-2	U		0.99		U	GAM
Uranium 238	U-238	U		21		U	GAM
Uranium 235	15117-96-1	U		1.9		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-04

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVX9

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-04 Client sample id B0TVX9
Dept sample id 7705-004 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/08/99
% solids 92.8 Custody/SAF No B99-001-101 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.734	0.29	0.22	0.30		U
Uranium 235	15117-96-1	0.034	0.068	0.26	0.30	U	U
Uranium 238	U-238	0.734	0.29	0.22	0.30		U
Plutonium 238	13981-16-3	0.107	0.11	0.20	0.050	U	PU
Plutonium 239/240	PU-239/240	3.64	0.70	0.20	0.050	B	PU
Nickel 63	13981-37-8	-1.36	1.3	2.2	20	U	NI_L
Americium 241	14596-10-2	0.178	0.062	0.063	0.050		AM
Total Strontium	SR-RAD	15.5	2.3	2.2	1.0		SR
Potassium 40	13966-00-2	7.37	1.6	0.98			GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Cesium 134	13967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	25.5	0.50	0.21	0.050		GAM
Europium 152	14683-23-9	1.98	0.55	0.62	0.10		GAM
Europium 154	15585-10-1	U		0.37	0.10	U	GAM
Europium 155	14391-16-3	U		0.45	0.10	U	GAM
Radium 226	13982-63-3	0.302	0.26	0.32	0.10	U	GAM
Thorium 228	14274-82-9	0.420	0.25	0.30			GAM
Americium 241	14596-10-2	U		0.23		U	GAM
Uranium 238	U-238	U		14		U	GAM
Uranium 235	15117-96-1	U		0.77		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-05

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVY0

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-05 Client sample id B0TVY0
Dept sample id 7705-005 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/09/99 08:20
% solids 92.5 Custody/SAF No B99-001-101 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Uranium 233/234	U-233/234	0.386	0.24	0.23	0.30		U
Uranium 235	15117-96-1	0.108	0.14	0.28	0.30	U	U
Uranium 238	U-238	0.386	0.24	0.23	0.30		U
Plutonium 238	13981-16-3	0	0.084	0.23	0.050	U	PU
Plutonium 239/240	PU-239/240	0.336	0.17	0.16	0.050	B	PU
Nickel 63	13981-37-8	-0.914	1.7	2.9	20	U	NI_L
Americium 241	14596-10-2	0	0.023	0.054	0.050	U	AM
Total Strontium	SR-RAD	-0.367	1.4	2.0	1.0	U	SR
Cobalt 60	10198-40-0	U		0.098	0.050	U	GAM
Cesium 134	13967-70-9	U		0.13		U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.36	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Radium 226	13982-63-3	0.408	0.22	0.21	0.10		GAM
Thorium 228	14274-82-9	0.684	0.17	0.15			GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Uranium 238	U-238	U		12		U	GAM
Uranium 235	15117-96-1	U		0.39		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

N903058-06

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0354

DATA SHEET

B0TVY1

SDG 7705 Client/Case no Hanford SDG-H0354
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903058-06 Client sample id B0TVY1
Dept sample id 7705-006 Location/Matrix 100 B/C SOLID
Received 03/13/99 Collected 03/09/99 08:35
% solids 87.9 Custody/SAF No B99-001-101 B99-001

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.376	0.21	0.26	0.30		U
Uranium 235	15117-96-1	0.124	0.17	0.32	0.30	U	U
Uranium 238	U-238	0.753	0.35	0.26	0.30		U
Plutonium 238	13981-16-3	-0.136	0.11	0.36	0.050	U	PU
Plutonium 239/240	PU-239/240	0.926	0.33	0.30	0.050	B	PU
Nickel 63	13981-37-8	0.621	1.5	2.4	20	U	NI_L
Americium 241	14596-10-2	0.184	0.067	0.045	0.050		AM
Total Strontium	SR-RAD	8.07	1.7	1.9	1.0		SR
Potassium 40	13966-00-2	9.89	1.5	0.91			GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Cesium 134	13967-70-9	U		0.12		U	GAM
Cesium 137	10045-97-3	36.0	0.61	0.17	0.050		GAM
Europium 152	14683-23-9	0.777	0.39	0.56	0.10		GAM
Europium 154	15585-10-1	U		0.37	0.10	U	GAM
Europium 155	14391-16-3	U		0.31	0.10	U	GAM
Radium 226	13982-63-3	0.522	0.31	0.31	0.10		GAM
Radium 228	15262-20-1	0.631	0.37	0.37	0.20		GAM
Thorium 228	14274-82-9	0.332	0.24	0.31			GAM
Thorium 232	TH-232	0.631	0.37	0.37			GAM
Americium 241	14596-10-2	U		0.15		U	GAM
Uranium 238	U-238	U		14		U	GAM
Uranium 235	15117-96-1	U		0.94		U	GAM

100 BC Areas-Quick Turn

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 2851-024					
B0TVX5	N903058-01			7705-001	0.417
B0TVX6	N903058-02			7705-002	0.075
B0TVX8	N903058-03			7705-003	0.879
B0TVX9	N903058-04			7705-004	0.178
B0TVY0	N903058-05			7705-005	U
B0TVY1	N903058-06			7705-006	0.184
BLK (QC ID=30327)	N903058-08			7705-008	U
LCS (QC ID=30326)	N903058-07			7705-007	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 024											
B0TVX5	N903058-01			0.032	0.500			84		677			15	03/23/99	03/23	SS-006
B0TVX6	N903058-02			0.055	0.500			72		677			15	03/23/99	03/23	SS-007
B0TVX8	N903058-03			0.049	0.500			88		677			15	03/23/99	03/23	SS-008
B0TVX9	N903058-04			0.063	0.500			82		677			15	03/23/99	03/23	SS-009
B0TVY0	N903058-05			0.054	0.500			62		677			14	03/23/99	03/23	SS-010
B0TVY1	N903058-06			0.045	0.500			77		677			14	03/23/99	03/23	SS-011
BLK (QC ID=30327)	N903058-08			0.019	1.00			91		677				03/23/99	03/23	SS-012
LCS (QC ID=30326)	N903058-07			0.019	1.00			99		677				03/23/99	03/23	SS-005
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.033	0.500			81		677			15	03/23/99	03/23	SS-013
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 0.041 ± 0.032
YIELD 82 ± 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

Test PU Matrix SOLID
SDG 7705
Contact L.A. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2851-024						
B0TVX5	N903058-01			7705-001	U	2.18
B0TVX6	N903058-02			7705-002	U	0.477
B0TVX8	N903058-03			7705-003	U	4.78
B0TVX9	N903058-04			7705-004	0.107 U	3.64
B0TVY0	N903058-05			7705-005	U	0.336
B0TVY1	N903058-06			7705-006	U	0.926
BLK (QC ID=30327)	N903058-08			7705-008	0.732	0.765
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok
Duplicate (N903058-01)	N903058-09			7705-009	- U	ok
Nominal values and limits from method 100 BC Areas-Quick Turn					RDLs (pCi/g) 0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024 2σ prep error 5.0 % Reference Lab Notebook #2851 pg. 024																
B0TVX5	N903058-01			0.44	0.100			52		698			11	03/18/99	03/19	SS-064
B0TVX6	N903058-02			0.29	0.100			62		698			11	03/18/99	03/19	SS-066
B0TVX8	N903058-03			0.15	0.100			61		1256			13	03/18/99	03/21	SS-006
B0TVX9	N903058-04			0.20	0.100			57		776			12	03/18/99	03/20	SS-006
B0TVY0	N903058-05			0.23	0.100			75		776			11	03/18/99	03/20	SS-007
B0TVY1	N903058-06			0.36	0.100			56		776			11	03/18/99	03/20	SS-008
BLK (QC ID=30327)	N903058-08			0.028	1.00			61		774				03/18/99	03/20	SS-010
LCS (QC ID=30326)	N903058-07			0.052	1.00			46		776				03/18/99	03/20	SS-009
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.31	0.100			50		774			12	03/18/99	03/20	SS-011
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 9 SAMPLES

MDA 0.23 ± 0.27
YIELD 58 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

Test U Matrix SOLID
SDG 7705
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2851-024											
B0TVX5	N903058-01			7705-001	0.629	U	0.597	105	63	19	26
B0TVX6	N903058-02			7705-002	0.564	U	0.597	94	62	7	14
B0TVX8	N903058-03			7705-003	0.874	U	0.804	109	67	0	11
B0TVX9	N903058-04			7705-004	0.734	U	0.734	100	56	5	9
B0TVY0	N903058-05			7705-005	0.386	U	0.386	100	88	28	40
B0TVY1	N903058-06			7705-006	0.376	U	0.753	50	36	16	24
BLK (QC ID=30327)	N903058-08			7705-008	U	U	U				
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok	ok				
Duplicate (N903058-01)	N903058-09			7705-009	ok	- U	ok	83	52	11	12
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Quick Turn							Averages	92		12	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 024											
B0TVX5	N903058-01			0.29	0.500			72	102				12	03/19/99	03/20	SS-005
B0TVX6	N903058-02			0.31	0.500			67	102				12	03/19/99	03/20	SS-006
B0TVX8	N903058-03			0.32	0.500			67	102				12	03/19/99	03/20	SS-007
B0TVX9	N903058-04			0.26	0.500			84	102				12	03/19/99	03/20	SS-009
B0TVY0	N903058-05			0.28	0.500			79	102				11	03/19/99	03/20	SS-011
B0TVY1	N903058-06			0.32	0.500			68	102				11	03/19/99	03/20	SS-012
BLK (QC ID=30327)	N903058-08			0.16	1.00			66	102					03/19/99	03/20	SS-015
LCS (QC ID=30326)	N903058-07			0.35	1.00			77	116					03/19/99	03/20	SS-055
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.33	0.500			65	102				12	03/19/99	03/20	SS-016
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

Test U Matrix SOLID
SDG 7705
Contact L.A. Johnson

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.29	± 0.11
FOR 9 SAMPLES	YIELD	72	± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 2851-024					
B0TVX5	N903058-01			7705-001	39.3
B0TVX6	N903058-02			7705-002	5.35
B0TVX8	N903058-03			7705-003	79.3
B0TVX9	N903058-04			7705-004	15.5
B0TVY0	N903058-05			7705-005	U
B0TVY1	N903058-06			7705-006	8.07
BLK (QC ID=30327)	N903058-08			7705-008	U
LCS (QC ID=30326)	N903058-07			7705-007	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 10.0 %			Reference Lab	Notebook #2851 pg. 024											
B0TVX5	N903058-01			1.9	0.100			90		400			11	03/18/99	03/19	GRB-217
B0TVX6	N903058-02			2.2	0.100			75		400			11	03/18/99	03/19	GRB-218
B0TVX8	N903058-03			3.3	0.100			49		400			11	03/18/99	03/19	GRB-219
B0TVX9	N903058-04			2.2	0.100			77		400			11	03/18/99	03/19	GRB-221
B0TVY0	N903058-05			2.0	0.100			82		400			10	03/18/99	03/19	GRB-222
B0TVY1	N903058-06			1.9	0.100			93		400			10	03/18/99	03/19	GRB-223
BLK (QC ID=30327)	N903058-08			0.60	1.00			34		148				03/18/99	03/19	GRB-231
LCS (QC ID=30326)	N903058-07			0.26	1.00			91		107				03/18/99	03/19	GRB-217
Duplicate (N903058-01) (QC ID=30328)	N903058-09			2.0	0.100			85		150			11	03/18/99	03/19	GRB-232
Nominal values and limits from method				1.0	1.00					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.3
Form DVD-SMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	1.8 ± 1.8
FOR 9 SAMPLES	YIELD	75 ± 41

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 2851-024						
B0TVX5	N903058-01			7705-001	U	248
B0TVX6	N903058-02			7705-002	U	11.9
B0TVX8	N903058-03			7705-003	U	182
B0TVX9	N903058-04			7705-004	U	25.5
B0TVY0	N903058-05			7705-005	U	U
B0TVY1	N903058-06			7705-006	U	36.0
BLK (QC ID=30327)	N903058-08			7705-008	U	U
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok	ok
Nominal values and limits from method 100 BC Areas-Quick Turn				RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024 2σ prep error 15.0 % Reference Lab Notebook #2851 pg. 024																
B0TVX5	N903058-01			0.53	159					101			10	03/13/99	03/18	JR,07,00
B0TVX6	N903058-02			0.053	166					436			10	03/13/99	03/18	JR,04,00
B0TVX8	N903058-03			0.49	149					103			10	03/13/99	03/18	JR,07,00
B0TVX9	N903058-04			0.21	182					102			10	03/13/99	03/18	JR,07,00
B0TVY0	N903058-05			0.13	183					101			9	03/13/99	03/18	JR,07,00
B0TVY1	N903058-06			0.17	159					185			10	03/13/99	03/19	JR,01,00
BLK (QC ID=30327)	N903058-08			0.018	750					142				03/13/99	03/19	JR,07,00
LCS (QC ID=30326)	N903058-07			0.022	750					185				03/13/99	03/19	JR,03,00
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.25	158					184			11	03/13/99	03/19	JR,04,00
Nominal values and limits from method				0.050	750					100			180			

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 2.21 ± 0.38
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

Test NI_L Matrix SOLID
SDG 7705
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 2851-024						
B0TVX5	N903058-01			7705-001	U	
B0TVX6	N903058-02			7705-002	U	
B0TVX8	N903058-03			7705-003	U	
B0TVX9	N903058-04			7705-004	U	
B0TVY0	N903058-05			7705-005	U	
B0TVY1	N903058-06			7705-006	U	
BLK (QC ID=30327)	N903058-08			7705-008	U	
LCS (QC ID=30326)	N903058-07			7705-007	ok	
Duplicate (N903058-01)	N903058-09			7705-009	-	U
Nominal values and limits from method				RDLs (pCi/g)	20	
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 10.0 %			Reference Lab		Notebook #2851 pg. 024										
B0TVX5	N903058-01			2.4	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX6	N903058-02			2.4	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX8	N903058-03			2.5	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX9	N903058-04			2.2	0.500					100			17	03/19/99	03/25	LSC-005
B0TVY0	N903058-05			2.9	0.500					100			16	03/19/99	03/25	LSC-005
B0TVY1	N903058-06			2.4	0.500					100			16	03/19/99	03/25	LSC-005
BLK (QC ID=30327)	N903058-08			2.0	0.500					100				03/19/99	03/25	LSC-005
LCS (QC ID=30326)	N903058-07			2.0	0.500					100				03/19/99	03/25	LSC-005
Duplicate (N903058-01) (QC ID=30328)	N903058-09			2.4	0.500					100			17	03/19/99	03/25	LSC-005
Nominal values and limits from method				20	0.500					10			180			

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

Test NI_L Matrix SOLID
SDG 7705
Contact L.A. Johnson

METHOD SUMMARY, cont.

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 2.4 ± 0.55
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
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SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDE

Client Hanford
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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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REPORT GUIDE

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

Client Hanford
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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

Client Hanford
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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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SDG 7705
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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-100	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 7 Days
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C		SAF No. B99-001		
Ice Chest No. Shipping Van 96-002	Field Logbook No. EL 1327-2		Method of Shipment		
Shipped To ~~GTMA/REGRA~~ RF 3.8.99	Offsite Property No. A9900882		Bill of Lading/Air Bill No. 423579523302		
			COA ~~R16B112600~~ RN 3/12/99 R16B112600		

POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None				
	Type of Container	P	aG	aG	aG	aG				
	No. of Container(s) Volume	1 20mL	1 60mL	1 60mL	1 60mL	1 500mL				
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time								
B0TVX5	Soil	3.8.99	1030	X				X			tie to B0TV17
B0TVX6	Soil	3.8.99	1045	X				X			tie to B0TV18
~~B0TVX7~~ RN 3/12/99	~~Soil~~	~~3.8.99~~	1100	X				X			tie to B0TV19
B0TVX8	Soil	3.8.99	0940	X				X			tie to B0TV16

CHAIN OF POSSESSION	Sign/Print Names			
Relinquished By R Coffman/R Nelson	Date/Time 3/12/99 1400	Received By FedEx	Date/Time 3-12-99	
Relinquished By FedEx	Date/Time 3-13-99 11:00	Received By DR Corso JA Corso	Date/Time 3-13-99	
Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1

Collector Fahlberg/Kerkow	**Company Contact** R Coffman **Telephone No.** 373-6425	**Project Coordinator** TRENT, SJ	**Price Code** **Data Turnaround**
Project Designation 100 BC Areas - Quick Turn	**Sampling Location** 100 B/C 116-B-2	**SAF No.** B99-001	
Ice Chest No.	**Field Logbook No.** EL 1327-2	**Method of Shipment** FedEx	
Shipped To TMA/~~RECRA~~ R.F 3.9.99	**Offsite Property No.** A990082	**Bill of Lading/Air Bill No.** 823579523302	
		COA R16B112600	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
Special Handling and/or Storage	Volume	20mL	60mL	60mL	60mL	500mL					
SAMPLE ANALYSIS		Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time									
~~B0TVX8~~	~~Soil~~	FS 3.8.99										
B0TVX9	Soil	3.9.99	0820	X				X			tie to	B0TV31
B0TVY0	Soil	3.9.99	0825	X				X			tie to	B0TV32
B0TVY1	soil	3.9.99	0835	X				X			tie to	B0TV33

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Nelson/R. Nelson	3/12 1440	Fed Ex	3-13-99
Fed Ex	3-13-99 11:00	[illegible]	3-13-99 16:22

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-13-99 11:00

CoC No. B99-001-100, B99-001-101

Container I.D. No. Shipping Van 96-002 Requested TAT (Days) 7 P.O. Received Yes [ ] No [✓]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Cooler Temperature: _____	Packing material is:	Wet [ ]	Dry [✓]

6. Number of samples in shipping container: 6

7. Number of containers per sample: 2 (Or see CoC _____)

8. Paperwork agrees with samples? Yes [✓] No [ ]

9. Samples have: Tape [·] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]

10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____

14. Received by [signature] Date: 3-13-99 Time: 11:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI - Hanford		A0010082

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ERC Engineering Support	Field & Analytical Support	Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Prepaid ☐ Collect

Shipped to: Company / Address / City / Country: Thermo Nutech, 2030 Wright Ave, Richmond, CA 94804-0040, (510)235-2633, Larry Johnson	Off-site Custodian
State / Zip Code	On-site Custodian / Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	33 lbs.	Sample #: B0TVX5, B0TVX6, B0TVX8, B0TVX9, B0TVY0, B0TVY1 Cooler ID: Shipping Van 96-002 Polycooler with environmental samples packed in packing peanuts BILL OF LADING # 423579523302	N/A
1	lbs. XXXX	Sample #: Cooler ID: Polycooler with environmental samples packed in packing peanuts. BILL OF LADING #	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
- ☐ Business Trip
- ☐ Off-site Assignment
- ☐ Shipment to Subcontractor. List Subcontract No. _____
- ☐ Other *(Please specify)* _____

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A		

Location of and Contact for Property *(Name/Phone No./Bldg./Area)*: Renee Nielson/(509)372-9604/3728 Bldg/300 Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3/12/99	~~RHB~~ RJN R1611260	

Originated By	Date	Authorized By	Date
Renee Nielson	3/12/99	Renee Nielson	3/12/99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
K R Christensen	3/12/99	K R Christensen	3/12/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C R Nelson	3-12-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

Test AM Matrix SOLID
SDG 7705
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 2851-024					
B0TVX5	N903058-01			7705-001	0.417
B0TVX6	N903058-02			7705-002	0.075
B0TVX8	N903058-03			7705-003	0.879
B0TVX9	N903058-04			7705-004	0.178
B0TVY0	N903058-05			7705-005	U
B0TVY1	N903058-06			7705-006	0.184
BLK (QC ID=30327)	N903058-08			7705-008	U
LCS (QC ID=30326)	N903058-07			7705-007	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 024											
B0TVX5	N903058-01			0.032	0.500			84		677			15	03/23/99	03/23	SS-006
B0TVX6	N903058-02			0.055	0.500			72		677			15	03/23/99	03/23	SS-007
B0TVX8	N903058-03			0.049	0.500			88		677			15	03/23/99	03/23	SS-008
B0TVX9	N903058-04			0.063	0.500			82		677			15	03/23/99	03/23	SS-009
B0TVY0	N903058-05			0.054	0.500			62		677			14	03/23/99	03/23	SS-010
B0TVY1	N903058-06			0.045	0.500			77		677			14	03/23/99	03/23	SS-011
BLK (QC ID=30327)	N903058-08			0.019	1.00			91		677				03/23/99	03/23	SS-012
LCS (QC ID=30326)	N903058-07			0.019	1.00			99		677				03/23/99	03/23	SS-005
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.033	0.500			81		677			15	03/23/99	03/23	SS-013
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 0.041 ± 0.032
YIELD 82 ± 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2851-024						
B0TVX5	N903058-01			7705-001	U	2.18
B0TVX6	N903058-02			7705-002	U	0.477
B0TVX8	N903058-03			7705-003	U	4.78
B0TVX9	N903058-04			7705-004	0.107 U	3.64
B0TVY0	N903058-05			7705-005	U	0.336
B0TVY1	N903058-06			7705-006	U	0.926
BLK (QC ID=30327)	N903058-08			7705-008	0.732	0.765
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok
Duplicate (N903058-01)	N903058-09			7705-009	- U	ok
Nominal values and limits from method 100 BC Areas-Quick Turn				RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024 2σ prep error 5.0 % Reference Lab Notebook #2851 pg. 024																
B0TVX5	N903058-01			0.44	0.100			52		698			11	03/18/99	03/19	SS-064
B0TVX6	N903058-02			0.29	0.100			62		698			11	03/18/99	03/19	SS-066
B0TVX8	N903058-03			0.15	0.100			61		1256			13	03/18/99	03/21	SS-006
B0TVX9	N903058-04			0.20	0.100			57		776			12	03/18/99	03/20	SS-006
B0TVY0	N903058-05			0.23	0.100			75		776			11	03/18/99	03/20	SS-007
B0TVY1	N903058-06			0.36	0.100			56		776			11	03/18/99	03/20	SS-008
BLK (QC ID=30327)	N903058-08			0.028	1.00			61		774				03/18/99	03/20	SS-010
LCS (QC ID=30326)	N903058-07			0.052	1.00			46		776				03/18/99	03/20	SS-009
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.31	0.100			50		774			12	03/18/99	03/20	SS-011
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 0.23 ± 0.27
YIELD 58 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

Test U Matrix SOLID
SDG 7705
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2851-024											
B0TVX5	N903058-01			7705-001	0.629	U	0.597	105	63	19	26
B0TVX6	N903058-02			7705-002	0.564	U	0.597	94	62	7	14
B0TVX8	N903058-03			7705-003	0.874	U	0.804	109	67	0	11
B0TVX9	N903058-04			7705-004	0.734	U	0.734	100	56	5	9
B0TVY0	N903058-05			7705-005	0.386	U	0.386	100	88	28	40
B0TVY1	N903058-06			7705-006	0.376	U	0.753	50	36	16	24
BLK (QC ID=30327)	N903058-08			7705-008	U	U	U				
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok	ok				
Duplicate (N903058-01)	N903058-09			7705-009	ok	- U	ok	83	52	11	12
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
100 BC Areas-Quick Turn							Averages	92		12	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 5.0 %			Reference Lab	Notebook #2851 pg. 024											
B0TVX5	N903058-01			0.29	0.500			72	102				12	03/19/99	03/20	SS-005
B0TVX6	N903058-02			0.31	0.500			67	102				12	03/19/99	03/20	SS-006
B0TVX8	N903058-03			0.32	0.500			67	102				12	03/19/99	03/20	SS-007
B0TVX9	N903058-04			0.26	0.500			84	102				12	03/19/99	03/20	SS-009
B0TVY0	N903058-05			0.28	0.500			79	102				11	03/19/99	03/20	SS-011
B0TVY1	N903058-06			0.32	0.500			68	102				11	03/19/99	03/20	SS-012
BLK (QC ID=30327)	N903058-08			0.16	1.00			66	102					03/19/99	03/20	SS-015
LCS (QC ID=30326)	N903058-07			0.35	1.00			77	116					03/19/99	03/20	SS-055
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.33	0.500			65	102				12	03/19/99	03/20	SS-016
Nominal values and limits from method				0.30	1.00			30-105	150	100		180				

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

Test U Matrix SOLID
SDG 7705
Contact L.A. Johnson

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.29	± 0.11
FOR 9 SAMPLES	YIELD	72	± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

Test SR Matrix SOLID
SDG 7705
Contact L.A. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 2851-024					
B0TVX5	N903058-01			7705-001	39.3
B0TVX6	N903058-02			7705-002	5.35
B0TVX8	N903058-03			7705-003	79.3
B0TVX9	N903058-04			7705-004	15.5
B0TVY0	N903058-05			7705-005	U
B0TVY1	N903058-06			7705-006	8.07
BLK (QC ID=30327)	N903058-08			7705-008	U
LCS (QC ID=30326)	N903058-07			7705-007	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 10.0 %			Reference Lab		Notebook #2851 pg. 024										
B0TVX5	N903058-01			1.9	0.100			90		400			11	03/18/99	03/19	GRB-217
B0TVX6	N903058-02			2.2	0.100			75		400			11	03/18/99	03/19	GRB-218
B0TVX8	N903058-03			3.3	0.100			49		400			11	03/18/99	03/19	GRB-219
B0TVX9	N903058-04			2.2	0.100			77		400			11	03/18/99	03/19	GRB-221
B0TVY0	N903058-05			2.0	0.100			82		400			10	03/18/99	03/19	GRB-222
B0TVY1	N903058-06			1.9	0.100			93		400			10	03/18/99	03/19	GRB-223
BLK (QC ID=30327)	N903058-08			0.60	1.00			34		148				03/18/99	03/19	GRB-231
LCS (QC ID=30326)	N903058-07			0.26	1.00			91		107				03/18/99	03/19	GRB-217
Duplicate (N903058-01) (QC ID=30328)	N903058-09			2.0	0.100			85		150			11	03/18/99	03/19	GRB-232
Nominal values and limits from method				1.0	1.00					100			180			

Lab id TMANC
Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	1.8 ± 1.8
FOR 9 SAMPLES	YIELD	75 ± 41

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/30/99

Test GAM Matrix SOLID
SDG 7705
Contact L.A. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 2851-024						
B0TVX5	N903058-01			7705-001	U	248
B0TVX6	N903058-02			7705-002	U	11.9
B0TVX8	N903058-03			7705-003	U	182
B0TVX9	N903058-04			7705-004	U	25.5
B0TVY0	N903058-05			7705-005	U	U
B0TVY1	N903058-06			7705-006	U	36.0
BLK (QC ID=30327)	N903058-08			7705-008	U	U
LCS (QC ID=30326)	N903058-07			7705-007	ok	ok
Duplicate (N903058-01)	N903058-09			7705-009	ok	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.050
100 BC Areas-Quick Turn						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 15.0 %	Reference Lab	Notebook #2851 pg. 024													
B0TVX5	N903058-01			0.53	159					101			10	03/13/99	03/18	JR,07,00
B0TVX6	N903058-02			0.053	166					436			10	03/13/99	03/18	JR,04,00
B0TVX8	N903058-03			0.49	149					103			10	03/13/99	03/18	JR,07,00
B0TVX9	N903058-04			0.21	182					102			10	03/13/99	03/18	JR,07,00
B0TVY0	N903058-05			0.13	183					101			9	03/13/99	03/18	JR,07,00
B0TVY1	N903058-06			0.17	159					185			10	03/13/99	03/19	JR,01,00
BLK (QC ID=30327)	N903058-08			0.018	750					142				03/13/99	03/19	JR,07,00
LCS (QC ID=30326)	N903058-07			0.022	750					185				03/13/99	03/19	JR,03,00
Duplicate (N903058-01) (QC ID=30328)	N903058-09			0.25	158					184			11	03/13/99	03/19	JR,04,00
Nominal values and limits from method				0.050	750					100			180			

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 9 SAMPLES

MDA 0.21 ± 0.38
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63
Preparation batch 2851-024					
B0TVX5	N903058-01			7705-001	U
B0TVX6	N903058-02			7705-002	U
B0TVX8	N903058-03			7705-003	U
B0TVX9	N903058-04			7705-004	U
B0TVY0	N903058-05			7705-005	U
B0TVY1	N903058-06			7705-006	U
BLK (QC ID=30327)	N903058-08			7705-008	U
LCS (QC ID=30326)	N903058-07			7705-007	ok
Duplicate (N903058-01)	N903058-09			7705-009	- U
Nominal values and limits from method				RDLs (pCi/g)	20
100 BC Areas-Quick Turn					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2851-024	2σ prep error 10.0 %			Reference Lab		Notebook #2851 pg. 024										
B0TVX5	N903058-01			2.4	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX6	N903058-02			2.4	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX8	N903058-03			2.5	0.500					100			17	03/19/99	03/25	LSC-005
B0TVX9	N903058-04			2.2	0.500					100			17	03/19/99	03/25	LSC-005
B0TVY0	N903058-05			2.9	0.500					100			16	03/19/99	03/25	LSC-005
B0TVY1	N903058-06			2.4	0.500					100			16	03/19/99	03/25	LSC-005
BLK (QC ID=30327)	N903058-08			2.0	0.500					100				03/19/99	03/25	LSC-005
LCS (QC ID=30326)	N903058-07			2.0	0.500					100				03/19/99	03/25	LSC-005
Duplicate (N903058-01) (QC ID=30328)	N903058-09			2.4	0.500					100			17	03/19/99	03/25	LSC-005
Nominal values and limits from method				20	0.500					10			180			

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0354

METHOD SUMMARY, cont.

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
SDG 7705
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD
FOR 9 SAMPLES

MDA 2.4 ± 0.55
YIELD ____ ± ____

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SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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Form DVD-RG
Version 3.06
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SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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GUIDE, cont.

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/30/99

SDG 7705
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
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Version 3.06
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7705
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0354

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-001-100

Page 1 of 1

Collector: Fahlberg/Kerkow	Company Contact: R Coffman	Telephone No.: 373-6425	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 7 Days		
Project Designation: 100 BC Areas - Quick Turn	Sampling Location: 100 B/C		SAF No.: B99-001
Ice Chest No.: Shipping Van 96-002	Field Logbook No.: EL 1327-2		Method of Shipment
Shipped To: ~~STMA/REGRA~~ RFC 3.8.99	Offsite Property No.: A9907852		Bill of Lading/Air Bill No.: 423579523302
			COA ~~R116B112600~~ RN 3/12/99 R16B112600

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1	1					
	Volume	20mL	60mL	60mL	60mL	500mL					
		Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time								
B0TVX5	Soil	3.8.99	1030	X				X			tie to B0TV12
B0TVX6	Soil	3.8.99	1145	X				X			tie to B0TV18
~~B0TVX7~~ RJN 3/12/99	~~Soil~~	~~3.8.99~~	1100	X				X			tie to B0TV19
B0TVX8	Soil	3.8.99	0940	X				X			tie to B0TV16

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By: R Nelson/R Nelson	Date/Time: 3/12/99 1400	Received By: FedEx	Date/Time: 3-12-99
Relinquished By: FedEx	Date/Time: 3-13-99 11:00	Received By: ARCorso JA Corso	Date/Time: 3-13-99 61:00
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Cesium-134, Uranium-238); Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-001-101	Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code / Data Turnaround
Project Designation 100 BC Areas - Quick Turn	Sampling Location 100 B/C 116-B-2		SAF No. B99-001	
Ice Chest No.	Field Logbook No. EL 1327-2		Method of Shipment Fed Ex	
Shipped To TMA/~~RECRA~~ RF 3-9-99	Offsite Property No. A990082		Bill of Lading/Air Bill No. 4235795233021	
			COA R16B112600	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation				None	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container				P	aG	aG	aG	aG						
No. of Container(s)				1	1	1	1	1						
Volume				20mL	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS				Activity Scan	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time											
~~B0TVX8~~	~~Soil~~	RF 3.8.99												
B0TVX9	Soil	3.9.99	0820	X				X					tie to	B0TV31
B0TVY0	Soil	3.9.99	0825	X				X					tie to	B0TV32
B0TVY1	soil	3.9.99	0835	X				X					tie to	B0TV33

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Renee Nielson / R. Nielson	Date/Time 3/12/99 1400	Received By Fed Ex	Date/Time 3-13-99
Relinquished By Fed Ex	Date/Time 3-13-99 11:00	Received By JR Corso / JR Corso	Date/Time 3-14-99 16:20
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Cesium-134, Uranium-238}; Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-13-99 11:00

CoC No. B99-001-100, B99-001-101

Shipping Cans

Container I.D. No. 96-002 Requested TAT (Days) 7 P.O. Received Yes [ ] No [✓]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Cooler Temperature: _____	Packing material is:	Wet [ ]	Dry [✓]

6. Number of samples in shipping container: 6

7. Number of containers per sample: 2 (Or see CoC _____)

8. Paperwork agrees with samples? Yes [✓] No [ ]

9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]

10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____

14. Received by [signature] Date: 3-13-99 Time: 11:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI - Hanford		A1110082

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ERC Engineering Support	Field & Analytical Support	Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Prepaid ☐ Collect

Shipped to: Thermo Nutech Company: 2030 Wright Ave Address: Richmond, CA 94804-0040 City: (510)235-2633 State Zip Code Country: Larry Johnson	Off-site Custodian On-site Custodian Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	33 lbs.	Sample #: B0TVX5, B0TVX6, B0TVX8, B0TVX9, B0TVY0, B0TVY1 Cooler ID: Shipping Van 96-002 Polycooler with environmental samples packed in packing peanuts BILL OF LADING # 423579523302	N/A
1	lbs. XXXX	Sample #: Cooler ID: Polycooler with environmental samples packed in packing peanuts. BILL OF LADING #	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
- ☐ Business Trip
- ☐ Off-site Assignment
- ☐ Shipment to Subcontractor. List Subcontract No. _____
- ☐ Other *(Please specify)* _____

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A		

Location of and Contact for Property *(Name/Phone No./Bldg./Area)*
Renee Nielson/(509)372-9604/3728 Bldg/300 Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3/12/99	RJN R1B R16112600	

Originated By	Date	Authorized By	Date
Renee Nielson	3/12/99	Renee Nielson	3/12/99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
R C Christensen	3/12/99	R C Christensen	3/12/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	3-12-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management